

**HUMBERTO MATURANA
BIOLOGY OF KNOWING
for beginners**

Marcelo Baeza-Flores

Copyright: 2022-A-1870, Chile.

CONTENTS

1. An unacceptable theory.
2. Is Maturana difficult to understand?
Circular writing.
3. In what order should Maturana's books be read?
4. How should my book be read?
5. The only irrefutable idea is that everything is refutable.
Living.
6. It has been believed that the truth is always good.
7. The Eternal created the world with His language.
8. The tree of knowledge.
9. Showing without truths.
Showing.
Truth.
10. Speaking is offending.

1st BIOLOGY

11. There is neither inside nor outside in our world.
12. Atom.
13. Molecule.
14. Cell.
15. Autopoiesis.
16. Multicellular organism.
17. Cognitos do not exist.
18. Nervous system.
19. *Homo sapiens*, human being, person, or just an animal?
20. Organization and Structure.
Everything changes constantly but remains the same.
Learning.
21. Structural Coupling.
22. Structural Determinism.
Every living thing is determined by its structure.

Perturbation.
Instructional interaction.

2nd LANGUAGING

23. Gorilla and chimpanzee.
24. Linguaging.
25. Human beings live in language.
26. Coordinations of consensual actions.
27. Rationality.
28. We create reality in our languaging.
29. Biology and Linguaging.

3rd SOCIETY

30. Biology of Cognition.
31. Main ideas of the Biology of Knowing.
32. Summary of the Biology of Knowing.
33. "Everything said is said by someone."
34. The observer.
35. Objectivity in parentheses.
36. Domain.
37. Observation also implies a domain.
38. Multiverse.
In multiverse, everybody is right about everything.
39. "Every reflection brings a world to the hand."
40. The nervous system is a closed network.
Dreaming.
Madness.
Simulation.
41. It is impossible to ensure that something happened without a record to prove it.
42. The truth does not exist, or nothing is true.
43. The error is a truth until its domain changes.
44. Maturana trilogy.
45. Nobody is kind or unselfish because no person is good.
46. The problem is believing that we can access an independent reality.
47. The truth of one generates the error in another.
48. If we all have the truth, we are all wrong.
49. Giving up the truth sets us free.
50. Who was better, Allende or Pinochet?
51. If you disagree, you will be disqualified.
52. Why is it not possible to convince everyone?
53. Maturana does not preach the religion of love.
54. All reality is legitimate but not equally desirable.
Legitimate.
Legal.
55. Every rational system has an emotional foundation.
56. No one is more intelligent than another.
57. Maturanic love.
58. 99% of diseases are due to the denial of love.

- 59. We must always converse, never dialogue.
- 60. We must never be tolerant because there is no love in toleration.
- 61. Democracy.
- 62. All evil is caused only by good people.
- 63. Maturana versus Kant.
- 64. Maturana is neither relativist nor constructivist.
- 65. Humberto Maturana is also a great foolish sage.
- 66. Autopoiesis makes us immortal.

4th CONTROVERSY

- 67. Is the human being an individual being or a social being?
- 68. Capitalism – Marxism – Keynesianism.
- 69. War of the sexes.
 - Reply.
 - Contradiction.
- 70. The evil of the law of the jungle.

Bibliography

1

An unacceptable theory

What do Darwin, Freud, Einstein, and Maturana have in common? They are geniuses who created puzzling, crazy, unacceptable theories.

Charles Darwin said that man did not originate from Adam and Eve but from an animal similar to a monkey. The anger was so great that Robert FitzRoy regretted, throughout his life, having taken him around the world on his Beagle ship because, thanks to this trip, Darwin elaborated his theory of evolution. His work is integrated into the Theory of Evolution.

Sigmund Freud said that human behavior and diseases were associated with sexuality; and that children also felt sexual pleasure. According to his theory, women can also enjoy sex; they get sick if they repress their desire. It was a sin and aberration of Freud because he said it in the Victorian¹ era, when the woman was pure and chaste, an earthly angel. The Nazis rejected his theory because he was a Jew. His creation is called Psychoanalysis.

Albert Einstein said that time and space are relative; that is to say, they do not measure the same everywhere: at the speed of light, time stops. In his famous formula $E = mc^2$, this genius shows us that matter and energy are the same. The Nazis also rejected his theory because he was a Jew. His work is the Theory of Relativity.

Humberto Maturana said that... What did Maturana say that is so puzzling, crazy, and unacceptable? He said that there is no absolute, universal, transcendent, immutable, irrefutable truth; human beings cannot discover any truth; living beings cannot learn from their environment; no one is more intelligent than another; culture and society are biological phenomena; people are emotional animals, not rational; human beings live in multiverse; we exist in language (not with language); language creates reality; every belief is equally legitimate;

¹ Victorian: Relating to the attitudes and values of society during Queen Victoria's reign, regarded as characterized especially by prudishness and a high moral tone (www.lexico.com).

99% of diseases are due to the denial of love; with **Maturanic love** injustice and abuse disappear; there can be no coexistence without **Maturanic love**. His theory is called Biology of Knowing.²

According to his theory, we should never be tolerant. Yes, you read that right! According to his theory, all the evil in the world is caused by good people. Yes, you read that right! His theory is so paradoxical³ that I believe in it 100% even though it has already been refuted⁴ by his detractors; that is to say, I believe in something that is not true. Yes, you read correctly! Was Maturana crazy? If you get to the end of this book, you will understand this and other amazing conclusions.

Humberto Maturana said:

“Many faculty members said I had gone crazy.”⁽⁴⁾ “Of course, they thought I was crazy. It got so bad that in my classes, when I turned around to write on the blackboard, they laughed at me. A friend told me about it one day.”⁽⁴⁾

“Muchos miembros de la facultad dijeron que me había vuelto loco.”⁽⁴⁾
“Por supuesto que me tomaron por loco. Llegó a tanto que en mis clases, cuando me daba vuelta para escribir en la pizarra, se reían de mí. Un amigo me lo contó un día.”⁽⁴⁾

Darwin, Freud, Einstein, and Maturana were four rejected men, who were mocked because they had created “nonsense”, but their brilliant ideas changed the world.

Rejected by some (today) but admired by most (tomorrow), Humberto Maturana has elaborated the most surprising, perplexing, most exciting theory, and he will also be an immortal and transcendent genius.

2

Is Maturana difficult to understand?

I once read that his book *The Tree of Knowledge* – which *easily* explains his theory– is most difficult to understand; the same person said that his book *About Machines and Living Beings* was an incomprehensible labyrinth. Someone said that no one could understand the theory of Maturana.

Albert Einstein and Charlie Chaplin

An anecdote says that during the premiere of the movie *City Lights*, Albert Einstein said to Charles Chaplin:

—What I admire most about your art is your universality; you do not say a word, but the world understands you!

Chaplin replied:

—It is true, but your glory is greater. Everyone admires you, even though they do not understand a word you say.

² Maturana also called it "biology of cognition" and "biology of knowledge".

³ paradox: A seemingly absurd or contradictory statement or proposition which when investigated may prove to be well founded or true (www.lexico.com).

⁴ refute: Prove (a statement or theory) to be wrong or false; disprove (www.lexico.com).

The theory of relativity is difficult to understand

Another anecdote says that a journalist commented to a prominent physicist:

—In the world, only two people understand the theory of relativity.

The physicist asked:

—Apart from Einstein, who is the other?

Is Maturana difficult to understand or difficult to accept?

Is it difficult to understand the theory of Humberto Maturana? The following dialogue is in the book *From Being to Doing*:

“Pörksen: You became really famous in the mid-1980s; previously, you were known only in the circles of biologists and cyberneticists. But suddenly, autopoiesis became a universal buzzword. Suddenly, sociologists, management consultants, and psychotherapists in the most diverse parts of the world picked up your ideas. This popularity has always puzzled me a bit because, to tell you the truth, you are a difficult thinker. Your language is not easy to understand; you reinterpret many concepts, invent neologisms and demand a lot from your readers; in short: in no way do you aim at the general public.

“Maturana: I do not think my considerations are particularly difficult to understand. Rather they are particularly difficult to accept.”

“No creo que mis consideraciones sean especialmente difíciles de entender, más bien son especialmente difíciles de aceptar.”

They hired a foreigner to explain the theory of Maturana

“Many people swallowed the myth that Humberto is complicated. [...] Or the last straw: a Chilean businessman who hired a foreign expert in Maturana for 150,000 dollars, and he told him: “I do not understand why they brought me when the office of the doctor is three blocks away.”⁵

Ximena Dávila, co-author with Maturana in her company “Matríztica”, acknowledges that she did not understand the theory of Maturana

While she was being interviewed with Humberto Maturana, Ximena Dávila said:

“Since 1989 or 1990, a little further, I had contact with some of the work of Humberto, especially with the concept **multiverse**. And I asked my professor of organizational development at that time, and he told me: “Look, he is a biologist who walks around... who is sizzling neurons around, whose name is Humberto Maturana, and who has written a book called *The Tree of Knowledge*”. I bought it, but I did not understand anything, and I say it in a good way because I think it happened or happens to many people.”⁶

Maturana says that “About machines and living beings” is a difficult book

⁵ Cristobal Gaggero, at www.elmostrador.cl, interviewed by Margarita Hantke, February 15, 2016.

⁶ Video entitled “Entrevista a Humberto Maturana y Ximena Dávila por su libro ‘El Árbol del Vivir’”, on the Helarte channel, on YouTube. Time: 05:45.

In the fourth edition, of July 1997, of *Editorial Universitaria*, Maturana wrote in his preface (the same one that was written for the second edition):

“The book is difficult, and many parts of it are unexpected, but it says what it tries to say.”

“El libro es difícil, y muchas partes de él son inesperadas, pero dice lo que intenta decir.”

Humberto Maturana is difficult for most because:

1. A scientist who is too brilliant, who has created an innovative, very complex theory that disrupts⁷ his own science, it is normal that he cannot explain it with simple words because he has crossed the border of language (new words, new formulas, new phenomena). Einstein and Maturana were from another world.
2. In his books and interviews, Humberto Maturana speaks in a **circular** manner, using his own words or neologisms⁸.
3. Biology, like physics, is not a mass science; it uses concepts that are not everyday; these are difficult to understand, for instance, photon⁹ and synapse¹⁰.
4. Maturana wrote in very long sentences. In our daily lives, we do not speak in long sentences.
5. The Biology of Knowing, like the theory of relativity, disrupts reality; it is not intuitive;¹¹ it seems illogical and absurd.
6. Humberto Maturana did not know how to write in easy-to-read Spanish (so that anyone could understand his ideas); it is a normal disability in scientists or intellectuals; teaching is a very difficult talent (in any domain, almost no one manages to be a teacher).
7. Most college students have mediocre¹² reading comprehension.

Circular writing

Example of circular writing in a very long sentence: it begins with an idea or concept (living) and ends with the same idea or concept that started the sentence (living):

“The structure of the living being determines its way of living, and the way of living of a living being guides the course of its own structural change, and, although the two domains of existence of the living being are disjoint, and each is abstract with respect to the other, they modulate each other recursively in living.”⁽⁵⁾

“La estructura del ser vivo determina su modo de vivir, y el modo de vivir de un ser vivo guía el curso de su propio cambio estructural, y, aunque los dos dominios de existencia del ser vivo sean disjuntos, y cada uno sea abstracto con respecto del otro, se modulan recursivamente en el vivir.”⁽⁵⁾

⁷ disrupt: (of a company or form of technology) cause radical change in (an industry or market) by means of innovation (www.lexico.com).

⁸ neologism: A newly coined word or expression (www.lexico.com).

⁹ photon: A particle representing a quantum of light or other electromagnetic radiation (www.lexico.com).

¹⁰ synapse: A junction between two nerve cells, consisting of a minute gap across which impulses pass by diffusion of a neurotransmitter (www.lexico.com).

¹¹ intuitive: Using or based on what one feels to be true even without conscious reasoning; instinctive (www.lexico.com).

¹² mediocre: Of only average quality; not very good (www.lexico.com).

Can you understand this sentence? If you cannot, it is due to Maturana's own and frequent words: structure, determine, living, structural change, domain, recursively. To understand it, you must master the meaning of each one, according to his theory (you must also know the significance of disjoint, abstract, and modulate).

When you finish reading my book, go back to reading that circular sentence; you will be able to understand it easily.

3

In what order should Maturana's books be read?

To make it easier to understand the theory of Maturana, after you read my book, you should follow this order:

- 1 The Tree of Knowledge.
- 2 Emotions and Language in Education and Politics.
- 3 Objectivity, an Argument to Compel.
- 4 From Being to Doing.
- 5 The Sense of the Human (do not read part IV: “Two Worlds?”).
- 6 From Biology to Psychology.
- 7 About Machines and Living Beings.

Before reading About Machines and Living Beings, you should read part IV of The Sense of the Human (“What is Seeing?” and “Biology of the Psychic”).

The concept of **autopoiesis** was created in the book About Machines and Living Beings; therefore, it should be the first book, but it is 100% technical-biological. If you cannot understand What is Seeing?, do not read About Machines and Living Beings (I will do the easy-read version of this book).

If you can, you should read it because it is the biological explanation of what Maturana observed in his laboratory, working with neurons to understand how the nervous system works.

After you have read these six or seven books, you can go on to whatever you want.

4

How should my book be read?

To know the theory of Humberto Maturana in a university chair takes three years; one year for each part: Biology, Language, and Society.

If your reading comprehension is very strong (96th percentile¹³) and you know the basics of the nervous system, you can learn on your own by reading the seven books I mentioned earlier.

¹³ You surpass 96% of university students.

My book has four parts: 1 Biology, 2 Language, 3 Society, 4 Controversy, but since many may abort reading Biology or Language, I suggest starting with Society because this is the simplest and most important part of the Biology of Knowing. The most exciting! If you manage to get through the Society part, you should continue with Controversy, then Biology and Language.

If you are neither afraid of Maturana nor have reading comprehension difficulties, you should read in this order: 1 Biology, 2 Language, 3 Society, 4 Controversy.

You must read my book twice; that way, when you start the second reading, you will understand all the concepts, and what was new and complex (in the first reading) will no longer be.

5

The only irrefutable idea is that everything is refutable

You can read very little or almost nothing about the Biology of Knowing, but what you must never forget is its more important implication:

In our world, nothing manages to be irrefutable truth; all ideas are rejected by someone because humans live in multiverse (different realities), where all ideas or ways of living are just preferences, “all legitimate, but not equally desirable”.⁽⁴⁾ Owing to this, our infinite individual difference creates different, divergent, discrepant worlds, which prevent the same reality from being accepted or shared by all.

Thus, it is inevitable that every idea will be refuted; any *truth* will be told that it is false or wrong.

No truth can be proven or demonstrated; not even Maturana can prove that the Biology of Knowing is true.

You must fear whoever tells you that he speaks with truths because if you do not accept his truth, he will not “recognize you as a legitimate other in coexistence with him”; you will not be able to live as you wish because your ideas or ways of living are wrong. With this denial arise all human conflicts.

Human beings are not equal, we cannot think alike, and we cannot share everything. Our living makes us different!

Living

Living is a neologism¹⁴ of Maturana, whose plain meaning is, as a verb, “remain alive”, but in the Biology of Knowing, it is a noun-verb that implies biological life and all the experiences of a human being—from his intrauterine life until he dies—in a constant transformation. In other words, *living* implies existing with history, in a drift with emotions and language. We all have life and live, but we all have a different *living*, a different history, with a different way of doing, knowing, language, etc. Our *living* today is never the same as yesterday, and it is always different from *living* tomorrow.

There are laws or limits that cannot be avoided or exceeded in the universe; the most important are:

1. Nothing can exceed the speed of light.
2. Nothing can be colder than absolute zero.
3. Nothing can avoid gravity.
4. No action can prevent a reaction.

¹⁴ neologism: A newly coined word or expression (www.lexico.com).

5. Nothing can be still.
6. Nothing can avoid the law of entropy.
7. No living thing can avoid death.

Humberto Maturana shows us another law or limit that cannot be avoided or exceeded:

Nothing is irrefutable; any truth will always be rejected by someone.

If everything is refutable, how can there be an irrefutable idea? It is a paradox! The paradoxes arise because we humans live in language, but they stop being when you do not confuse the domains. Read my book, and you will be able to understand any paradox.

6

It has been believed that the truth is always good

People cannot dissociate truth from goodness; according to them, the truth is always good, and what is good is true. Therein lies the danger!

It was the Greek philosopher Plato who created this very dangerous idea; it was his Trojan horse that he left us:

“Keep certain, then, that what sheds the light of truth on the objects of knowledge, what gives the soul the faculty of knowing, is the idea of the Good, which is the principle of science and truth [...] in the intelligible¹⁵ world science and truth can be considered as images of the good”.¹⁶

There are no truths in the Biology of Knowing, nor are human beings good or bad; therefore, unlike Plato, there is neither Truth nor Goodness in the theory of Maturana.

Since Humberto Maturana was an atheist, and because most people are believers, I beg you not to fear the idea of a world without goodness. I, who fear the Eternal and study the Torah and the Tanakh (Old Testament of the Christians), can quote the words of the Eternal when He said:

“Every design¹⁷ of the heart of man is evil from his adolescence.”¹⁸

I can also quote the words of Yeshua, the Jewish rabbi¹⁹ or sage (who Christians call Jesus the Christ):

“Well, if you, being evil, know how to give good gifts to your children, how much more will the Father who is perfect give the Ruach HaKodesh²⁰ from heaven to those who ask Him?”²¹

Although I am not an exegete²² of any sacred book, I dare to say that Maturana's theory is not incompatible with the Torah, the Tanakh, the Christian Bible, Jewish wisdom, nor Judeo-Christian wisdom.

7

The Eternal created the world by His language

¹⁵ intelligible: Able to be understood; comprehensible (www.lexico.com).

¹⁶ Plato, “Republic”.

¹⁷ design: Purpose or planning that exists behind an action, fact, or object (www.lexico.com).

¹⁸ Bereshit, 8:21, in the Torah (“Genesis” of the Christian Bible).

¹⁹ rabbi: A Jewish scholar or teacher, especially one who studies or teaches Jewish law (www.lexico.com).

²⁰ Ruach HaKodesh: Hebrew concept that Christians have translated as “Holy Spirit”.

²¹ Hilel, 11:13, “El Código Real, Nuevo Testamento, Versión Textual Hebreaica” (Luke, in the Christian New Testament).

²² exegete: A person who interprets text, especially scripture (www.lexico.com).

Humberto Maturana said that humans live in language and that reality is created in language. It is surprising to think that if you read chapter 1 of Bereshit (“Genesis” of the Christian Bible), you will see that the Eternal created the world with His words; speaking. The language created our universe!

In Tehillim (Psalms) 33:6, it says: "By the word of the Eternal, the heavens were made"; it could also be translated as “**in** the word” or “**with** the word”. If we translate it as "**In** the word of the Eternal, the heavens were made", we enter the world of Baruch Spinoza because everything is in the Eternal.

If the Eternal is our creator (or it is the ancient wisdom of the Jews), it is a surprising revelation: the language created human beings, and we have created our reality in our language.

8

The tree of knowledge

In the theory of Maturana and the Torah, we find another surprising revelation: the “tree of knowledge” in the Garden of Eden. The Eternal forbade Adam and Eve (the first *Homo sapiens* couple) to eat its fruit, but the serpent told Eve:

“In the day you eat of it, your eyes will be opened, and you will be like Elohim, knowers of good and bad.”²³

That is the origin of evil and suffering of human beings.

The serpent said that “your eyes will be opened”, and you will see what you cannot see because the nervous system is a closed network, unable to see anything external. Since that day, human beings have believed that they see. The nervous system was designed by the Eternal!

Biologically, we see thanks to photons²⁴, but the eye cannot see a photon. A paradox!

The serpent said, “and you will be like the Eternal” because you do not know what is good or bad, owing to the nervous system cannot know what is good or bad. Since that day, human beings have acted like gods, deciding for the lives of others, deciding what is good or bad because they believe they are “knowers of good and bad”.

Until today, human beings have believed that they can see, discover, and know truths; this belief gives rise to human tragedy.

We must prevent them from turning Humberto Maturana into another Jesus; we must avert his words from being used to deny or destroy another human being, as Catholicism did, which turned the Jewish Yeshua into the Christian Jesus.

9

Showing without truths

Humberto Maturana said:

²³ Bereshit, 3:4, Torah (Genesis, Old Testament).

²⁴ photon: A particle representing a quantum of light or other electromagnetic radiation (www.lexico.com).

“Of course, there are different experiences and preferences, interests and also abilities, that is true, but I maintain that each person, if they wish, is capable of learning what another could learn.” ⁽⁴⁾

“Por supuesto que hay diferentes experiencias y preferencias, intereses y también habilidades, eso es cierto, pero sostengo que cada persona, si es que lo desea, es capaz de aprender lo que otro pudo aprender”. ⁽⁴⁾

You can criticize that if he says “of course” and “that is true”, he is speaking with truths, assuring something that is real, acknowledging a reality. It is inevitable to speak with affirmations. When Maturana says “of course” and “that is true”, he is speaking in a specific domain, supporting what he believes, alluding to a reality that does not have universal validity, showing what he observes in his “multiverse” (always with “objectivity in parentheses”). What Maturana says is only valid in the Biology of Knowing; he has never intended to impose his theory –on anyone– because he does not speak with absolute, universal, transcendent, immutable, irrefutable truths.

Showing is not proving

Humberto Maturana said:

“A Peruvian psychologist proved in a study that only one adult who fully trusts the child is needed: he paves the way for the child to respect himself.” ⁽⁴⁾

“Un psicólogo peruano demostró en un estudio que basta un solo adulto que confíe plenamente en el niño: le allana el camino para respetarse a sí mismo”. ⁽⁴⁾

You can criticize that if he says “proved”, he implies that the truth can be proven. When Maturana said “proved”, he was only alluding to a concept typical of any study, to a thesis of the Peruvian psychologist. In his theory, Maturana does not use the word “proved”; he prefers *shown*. Showing implies an emotion that he wants to share, that only shows what he has observed, without implying truths, because nothing can be proven or demonstrated.

A mathematical proof is only proof of the internal consistency of an argument; it does not imply accessing an external reality because mathematics is only a human invention that is lived in the language (mathematical language).

We can also believe that he used the word “proved” due to a lapse²⁵ or his enthusiasm for the moment; if you want, we can think that his emotion played a prank on him or betrayed him. We can think the same when he has even used the word “truth” or “discover”.

In his oldest publications, Maturana used the word “proved” and others that he later eliminated or replaced as he developed his theory, which was born as Biology of Cognition, then changed to Biology of Knowledge, and finished in Biology of Knowing.

²⁵ lapse: A brief or temporary failure of concentration, memory, or judgement (www.lexico.com).

The truth

That the hand is a hand, that the rain is water, nobody can doubt it because it is an unquestionable truth. There is neither conflict nor danger in these “truths”; therefore, I will not reply to that.

The “truth” that interests us in the theory of Maturana has several attributes:

Absolute:

Viewed or existing independently and not in relation to other things; not relative or comparative;²⁶ that is to say, it is neither created nor does it need conditions to exist.

Universal:

Relating to or done by all people or things in the world, applicable to all cases; in other words, it is valid anywhere in the cosmos.

Transcendent:

Beyond or above the range of normal or physical human experience; that is to say, it transcends time, and it has implications and consequences.

Immutable:

Unchanging over time or unable to be changed; in other words, it will always be the same.

Irrefutable:

Impossible to deny or disprove; that is to say, it cannot be proven wrong.

Since the nervous system is a closed network that cannot access an external environment, in the Biology of Knowing is impossible to discover truths that are absolute, universal, transcendent, immutable, and irrefutable. When these truths are believed, human life becomes very dangerous; it can become hell.

10**Speaking is offending**

Maturana is also difficult to comprehend because he rarely explained his theory with social or political examples from current life. I think he avoided arguing, was afraid of something, did not want to leave his laboratory, or could not come down from his Olympus; there are endless explanations.

To make the Biology of Knowing easier to understand and more exciting, I try to explain it with several controversial examples.

I also allude to my own experience, but I do not do so out of presumption.²⁷ It is necessary since I cannot stand in front of the world to tell everyone what is the truth about each one (this is the claim²⁸ of those who live objectively and believe in universal truths). I can only allude to or show my own emotions. Owing to my own autopoiesis, I cannot avoid being self-referential; I can only talk about what happens to me; it is my only reality.

My reality has no existence beyond my nose; it arises in my biology, and there it stays; therefore, there is no reason for anyone to be offended or afraid of anything I say. Nobody should feel threatened because I do not live with truths. Since I am Maturanic, I can tell no one that they are wrong in their belief; I live in multiverse.

²⁶ The five definitions come from www.lexico.com: absolute, universal, transcendent, immutable, and irrefutable.

²⁷ presume: Be arrogant or impertinent enough to do something (www.lexico.com).

²⁸ claim: State or assert that something is the case, typically without providing evidence or proof (www.lexico.com).

It is impossible to write without making affirmations. Any claim will inevitably be rejected. You can't understand the theory of Maturana without understanding his concept of **domain** (my book teaches you). If you understand the concept of **domain**, you will understand that every statement is only valid in the domain that is said; no idea can achieve universal validity.

When Maturana says that “social systems are conservative systems”,⁽³⁾ you can reject this statement and say that “social systems are liberal systems” or qualify them as you like; neither Maturana nor you make a mistake if you think differently about society.

“Los sistemas sociales son sistemas conservadores”,⁽³⁾

When I say that “women are different from men”, you can reject this statement and say that “women are equal to men” or say whatever you want (you can say that a woman is a man with a uterus). Neither you nor I make a mistake if we think differently about women and men.

Due to our multiversic²⁹ living, with infinite domains for each idea or reflection, it is inevitable to feel annoyed by what another is or does. Therefore, what I say, with my examples and explanations, will also help you to evaluate your own emotions, lack of respect, degree of intolerance, and aggressiveness. Why? Because speaking is offending (there will always be someone who is offended by what do you say).

1st BIOLOGY

11

There is neither inside nor outside in our world

Outside of the cosmos

If our universe is not infinite, imagine that you manage to get out of it, getting very far away, to observe it from the outside in its entirety. Once you have “exited”, what would you see in front of you in the distance? You would watch a thing, an object, a mass, an entity, or a unit. You would see something luminous, surrounded by nothing, with emptiness around it (the same emptiness that surrounds you while you observe it).

In “reality”, the universe is something we perceive with our eyes. In language, universe is a noun (the name of something); in science, the universe is an astronomical phenomenon; in Spanish, there is no “universe” (they call it *universo*); they are different domains.

Universe

Now imagine that you are approaching, “flying” at high speed to enter the universe, and observe what is inside it. Once you have “entered”, what would you see in front of you, around you, in the distance? You would see a lot of luminous things, separated and far away, surrounded by nothing, with emptiness around (the same emptiness that surrounded you when you were out of the universe). Each of these luminous things is called a galaxy; so you never saw a universe because it was just galaxies that were together.

²⁹ multiversic: relating to multiverse (infinite realities, different for everyone); it is opposite to universic (a universal truth, a universal reality, the same for all).

When you enter the universe, you change the domain; if you leave it, you also change the domain; therefore, what you observe is different.

Now you can conclude that the universe is not a unit but is a collection of galaxies. Nor is it a thing that has an interior since there is no border (membrane or wall) that separates an interior from an exterior (there are neither entrances nor exits); there is nothing inside or outside; it is the same emptiness.

What we call the universe is only a concept that defines or explains the set formed by all the galaxies. If there is no unit or thing called the universe, then it is just a concept or word (it does not exist in reality but exists in language).

Galaxy

Now imagine that you are approaching, “flying” at high speed to enter a galaxy, and observe what is inside it. Once you have “entered”, what would you see in front of you, around you, in the distance? You would see so many things, separate and far away, surrounded by nothing, with emptiness around you (the same emptiness that surrounded you when you were outside the galaxy). Each of these things is called a star (star, planet, asteroid, comet).

When you enter a galaxy, you change the domain; if you leave it, you also change the domain; therefore, what you observe is different.

You can also conclude that the galaxy is not a unit but a set of stars, planets, asteroids, and comets. Nor is it a thing that has an interior since there is no border (membrane or wall) that separates an interior from an exterior (there are neither entrances nor exits); there is nothing inside or outside; it is the same emptiness.

What we call a galaxy is only a concept that defines or explains the set formed by all the stars, planets, asteroids, and comets that are organized in a galaxy. If there is no unit or thing called a galaxy, then it is just a concept or word (it does not exist in reality but exists in language).

Planet

Now imagine that you are approaching, “flying” at high speed to enter a planet, and observe what is inside its spherical body (after observing oceans and continents). To look inside, you must reduce your size to the atomic scale (or you will only see water, earth, stones, animals, plants, and things that make up or integrate the planet). Once you have “entered”, what would you see in front of you, around you? You would see so many things, separate, surrounded by nothing, with emptiness around you (the same emptiness that surrounded you when you were off the planet). Each of these things is called an atom.

When you enter a planet, you change the domain; if you leave it, you also change the domain; therefore, what you observe is different.

You can also conclude that the planet is not a unit but a set of different atoms. Nor is it a thing that has an interior since there is no border (membrane or wall) that separates an interior from an exterior (there are neither entrances nor exits); there is nothing inside or outside; it is the same emptiness that predominates in the universe.

What we call a planet is only a concept that defines or explains the set formed by all the types of atoms that are organized in a planet. If there is no unit or thing called a planet, then it is just a concept or word (it does not exist in reality but exists in language).

Atom

Now imagine that you get closer because you want to enter an atom and observe what is inside it. Once you have “entered”, what would you see in front of you, around you? No one knows or has seen it. You are supposed to see many things called *subatomic particles* (proton, neutron, electron, and others, including the *God particle*), but we do not even know how they are. Suffice it to say that almost 100% of the atom is empty.

When you enter an atom, you change the domain; if you leave it, you also change the domain; therefore, what you observe is different.

You can also conclude that the atom is not a unit but a set of *subatomic particles*. Nor is it a thing that has an interior since there is no border (membrane or wall) that separates an interior from an exterior (there are neither entrances nor exits); there is nothing inside or outside; it is the same emptiness that predominates in the universe.

What we call an atom is only a concept that defines or explains the set formed by the *subatomic particles* that are organized in an atom. If there is no unit or thing called an atom, then it is just a concept or word (it does not exist in reality but exists in language).

Subatomic particle

Now imagine that you get closer to enter a subatomic particle, but you cannot do it because, in this thing, there is no interior. We do not even know if a subatomic particle is something solid, just energy, or something that has not been defined yet.

A photon³⁰ is a subatomic particle.

Our eyes cannot see a photon, but they cannot see without photons (photons hit neurons³¹ in the eye).

There is neither inside nor outside

You traveled from the *outside* of the universe to the *inside* of an atom. So you can understand that, in our world (cosmos³², universe), nothing has an outside or an inside because one thing –everything– is always made up of other elements (the thing always disappears when its elements are observed). Interior and exterior are only referential concepts, such as *up* and *down*. In our universe, there is no up and down either.

Neither is it known –nor can it be known– if there is something outside the universe; physically, you cannot get out of our cosmos.

In our universe, there is only a vacuum with *something* that we cannot see (subatomic particles).

World of only one dimension

But, you will reply, if something exists, it must have an interior. Some things have no inside. If I tell you that there is something that, in its form, has *length* but not *width*, you would say that this is not possible. I tell you that it is possible! There is one thing that, although you can measure its length, you cannot measure its width because it does not have: a line.

³⁰ photon: A particle representing a quantum of light or other electromagnetic radiation (www.lexico.com).

³¹ neuron: A specialized cell transmitting nerve impulses; a nerve cell (www.lexico.com).

³² cosmos: The universe seen as a well-ordered whole (www.lexico.com).

A *line* is something that exists in the domain of geometry; a *subatomic particle* exists only in the domain of theoretical physics.

World without dimensions

There is something more surprising than a *straight line*, something that has neither length nor width because it has no shape or size: a point! A *point* only has a position; you can know where it is, but you can never see it (it is like another *uncertainty principle*).

When you draw a line with your ruler and mark a point with your pencil, you are only representing these concepts with a drawing. Everything that exists in the universe can be represented with a word and a drawing. Words and pictures are languages in different domains; they are not objects since they do not have three dimensions.

The point is the basic unit of geometry; everything that has been created with geometry is made only with points. We have created our world with something that does not physically exist!

Uncertainty principle

In quantum mechanics, there is the *uncertainty principle*, “discovered” by the German physicist Werner Karl Heisenberg, who maintains that it is impossible to know (simultaneously) the position and speed of a subatomic particle. If you can know its position, you cannot know its speed, and vice versa.

There is no interior in the human body

Just as the universe is made up of *things*, any *thing*, in turn, is made up of other *things*; due to this, you can never see the inside of something because when you try to see inside, you always discover other things; there are always different things inside something.

A butterfly is a living being. A stone is a non-living thing; it is an inanimate object.

A butterfly can be a corpse; a corpse is a living being that has lost its life.

If you disassemble a bicycle into all its parts, you only get objects; the bike disappears.

The human body is composed –at first glance– of organs, bones, and liquid; they are different *things* among them: a kidney is not a bone, and a bone is not a person. If you dissect³³ a corpse, separating all its components, you get parts of a body, but you cannot see the inside of a corpse because the corpse has been divided into different things. The corpse has disappeared!

A living being that dies becomes a corpse; a corpse that is dissected becomes a set of things.

On a microscopic scale, what are the basic components of a human being? Cells are the basic *things* or units that make up a person's body. There are different types of cells; for instance, neurons are nerve cells. A human being is made up of hundreds of trillions of cells.

Cells can also be divided into parts: nucleus, cytoplasm, plasma membrane, mitochondria, DNA, etc.

³³ dissect: Methodically cut up (a body or plant) in order to study its internal parts (www.lexico.com).

What are the smallest building blocks of a cell? Atoms are the smallest *things* that make up a cell; 100% of its mass or *body* is made up of atoms because all things that exist are made up of atoms (100% of the universe is made up of atoms). Atoms are made up of subatomic particles, and our universe begins or ends with them.

Biology begins with atoms.

Amazon.com

https://www.amazon.com/Humberto-Maturana-Biology-Knowing-beginners-ebook/dp/B0BW7RYJS8/ref=sr_1_3?crid=2IV6NMMELUIDL&dib=eyJ2IjoiaMSJ9.hrjB8cQC8PxxoJ9FJLzyGxQyLDme-5oV0W10QGE-EGxR_ojp2xAZIBgdz7j2zsmaNrmVS6fbje6S3EZhVuijSlbSEyP6i-tENWagncuugwdpLvMv1Uga1T6ifcpxTEfNyhRfVua4je9Jr0oVqX0kObl9-bssln0k9Egf9Swfi8SmyvF5RqdWIM_gzC4oiaiiA.dckpaTlehzCnW8Xbf0PQ7d0Jl4RkcaNkM8zJ77JBsqw&dib_tag=se&keywords=humberto+maturana&qid=1714618772&s=books&sprefix=humberto+maturana%2Cstripbooks-intl-ship%2C680&sr=1-3